

CLAIMS

1. A mask material for reactive ion etching that uses carbon monoxide gas, to which a nitrogen-containing compound gas is added,
5 as a reactive gas,

the mask material for reactive ion etching characterized by containing silicon and tantalum.

2. The mask material for reactive ion etching according to claim 1, characterized by containing either a compound of silicon
10 and tantalum or a mixture of silicon and tantalum.

3. The mask material for reactive ion etching according to claim 1 or 2, characterized by a layered body comprising a silicon based material layer that is formed from a material containing silicon in a layer shape and a tantalum based material layer that
15 is formed from a material containing tantalum in a layer shape.

4. The mask material for reactive ion etching according to any one of claims 1 to 3, characterized by containing at least one material from among an oxide that contains silicon and tantalum, a nitride that contains silicon and tantalum, a silicon oxide, a
20 silicon nitride, a tantalum oxide, and a tantalum nitride.

5. The mask material for reactive ion etching according to any one of claims 1 to 4, characterized by a ratio of a number of silicon atoms to a total number of atoms made up of the number of silicon atoms and a number of tantalum atoms being more than 0% and
25 50% or less.

6.The mask material for reactive ion etching according to
claim 5, characterized by the ratio of the number of silicon atoms
to the total number of atoms made up of the number of silicon atoms
and the number of tantalum atoms being more than 10% and 30% or
5 less.

7.A mask for reactive ion etching characterized by comprising
the mask material for reactive ion etching as set forth in any one
of claims 1 to 6.

8.A dry etching method characterized by including: a mask
10 forming step of forming a mask layer comprising the mask material
for reactive ion etching as set forth in any one of claims 1 to 6
in a predetermined pattern on an object to be processed; and an
object processing step for processing the object to be processed in
a shape of the pattern through the use of reactive ion etching that
15 uses carbon monoxide gas, to which a nitrogen-containing compound
gas is added, as a reactive gas.

9.The dry etching method according to claim 8 characterized
in that the mask forming step is a step of: depositing a first mask
layer on the object to be processed using the mask layer as the
20 first mask layer; forming a second mask layer in the pattern on the
first mask layer; and processing the first mask layer into the
shape of the pattern through the use of reactive ion etching that
uses a halogen containing gas as a reactive gas.

10.The dry etching method according to claim 8 or 9
25 characterized by processing a magnetic material serving as the

object to be processed.